National Aeronautics and Space Administration

Lyndon B. Johnson Space Center
Houston, Texas

Station prototype

The Active Rack Isolation System on STS-79 will help set the stage for space station. Story on Page 3.

SBA recognition

The Business and Information Systems Directorate take home small business accolades. Photo on Page 4.

Space News Roundup

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NASA Photo

STS-79 Commander Bill Readdy floats through a tunnel that connects *Atlantis*' flight and mid decks to the Spacehab module in the cargo bay. The Spacehab will serve as an orbiting laboratory when *Atlantis* docks with the Russian Mir Space Station.

Atlantis returns to Mir for Lucid, Blaha exchange

By Karen Schmidt

Atlantis was poised to dock with the Russian Mir Space Station late Wednesday as Astronaut Shannon Lucid wrapped up her preparations for a return to Earth after six months on the Russian outpost.

Atlantis left Launch Pad 39A at 3:54 a.m. CDT beginning a 10-day mission that will see the first exchange of American astronauts in space. Shortly after liftoff *Atlantis*' auxiliary power unit 2 shut down prematurely after main engine cutoff. The mission management team reviewed engineering data of the shutdown and decided *Atlantis*' two other fully functional APUs would be sufficient to continue with the 10-day mission.

"In looking at the data, it looks almost like one of the fuel valves to the APU shut, basically cutting the fuel off that was going to it, and it did a nominal ramp down just like it would if you were shutting the thing down," said Lee Briscoe, the STS-79 mission operations representative. "The team has hypothesized that a number of different things could have caused this and you can't put your finger on a specific cause. There are probably three or four different things that could have caused it to shut down."

The team will continue to look at data before making a decision of whether to try to start the APU during the flight control system check out the day before *Atlantis* is scheduled to land. APUs provide hydraulic power to *Atlantis'* flight control surfaces during entry and landing.

Commander Bill Readdy and Pilot Terry Wilcutt began rendezvous burns late Monday that positioned the orbiter for link up with the Russian station. Mission Specialists Jay Apt and Carl Walz set up the Active Rack Isolation System. The ARIS, a prototype of an International Space Station system, is designed to eliminate disturbances or vibrations to achieve true microgravity results in science experiments. After activation, investigators discovered a bent push rod in one of the experiment's actuators, and the crew went through a repair procedure to replace the push rod Tuesday night.

Apt and Walz also helped Mission Specialists Tom Akers and John Blaha pack some of the 4,600 pounds of food and equipment that will be transferred once *Atlantis* is docked to the station.

At mid-week, *Atlantis* was scheduled to dock with Mir at 10:13 p.m. Wednesday and open the hatch about two hours later. After crew welcoming ceremonies were to be completed, Mission Specialist John Blaha was expected to become part of the Mir 22 crew as Lucid becomes part of *Atlantis*' crew.

"The first thing we do after the greeting ceremony is I take my survival equipment, my Russian space suit and all of my personal equipment on to the Mir," Blaha said. "We put my equipment into the Soyuz capsule and we take Shannon's out and right after that transfer of equipment, that's when I become part of the Mir crew and Shannon becomes part of the shuttle crew."

After the crew transfer, both crews will settle in for five days of joint science operations in the Spacehab module. The module, redesigned for this flight to provide more science

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Brown to command mission to study Earth's atmosphere

By Eileen Hawley

Three-time shuttle veteran Curtis Brown will command the crew of STS-85 during *Discovery*'s 11-day mission to study changes in the Earth's atmosphere.

STS-85 is targeted for a July 1997 launch and will carry a crew of five including Pilot Jeffrey Ashby and Mission Specialists Jan Davis, Robert Curbeam and Stephen Robinson. Ashby, Curbeam and Robinson will be making their first trips to space. Davis is a veteran of two missions.

Brown

Davis will use *Discovery*'s robot arm to deploy the Cryogenic Infrared Spectrometers and Telescopes for the Atmosphere—Shuttle Pallet Satellite, or CRISTA-SPAS, for about 48 hours of free-flight. CRISTA-SPAS consists of three telescopes and four spectrometers that will measure trace gases and dynamics of the Earth's atmosphere. Davis also will operate the robot arm for CRISTA-SPAS retrieval.

Two other instruments mounted on the Shuttle Pallet Satellite also will study the Earth's atmosphere. The Middle Atmosphere High Resolution Spectrograph Instrument will measure hydroxyl and nitric oxide by sensing UV radiation emitted and scattered by the atmosphere, while the Surface Effects Sample Monitor will evaluate the effects of atomic oxygen on optical materials.

The Shuttle Pallet Satellite on which the scientific instruments are mounted is a platform that provides power, command, control and communication with *Discovery* during free-flight. CRISTA-SPAS previously flew on STS-66 in 1994. STS-85 will mark the fourth in a series of missions designed to study the Earth's atmosphere.

The crew also will support the Manipulator Flight Development investigation being sponsored by NASDA, the Japanese Space Agency. MFD consists of three separate experiments located on a support truss in the payload bay and is designed to demonstrate applications of the shuttle's robot arm for possible use on the Japanese Experiment Module of the International Space Station.

Several hitchhiker payloads, including the Technology Applications and Science-01, the International Extreme Ultraviolet Hitchhiker-02, the Solar Extreme Ultraviolet Hitchhiker, and the Ultraviolet Spectrograph Telescope for Astronomical Research will be housed in *Discovery*'s payload bay, operating independently of crew support during the flight.

JSC inspection an opportunity to explore technology

JSC will open its doors on Nov. 13 and 14 to business leaders and technical representatives from outside the NASA/aerospace community to learn more about the center's missions, facilities and technologies.

The event, titled "NASA Johnson Space Center Inspection …an Opportunity to Explore," is focused on showcasing JSC's technologies, facilities and technical capabilities which may have commercial applications to industries that are not typically associated with NASA or the aerospace industry.

A team of representatives from across the center, led by Bob Holkan, has been working for several months on the content and format for the program, and will be issuing letters of invitation to a large number of CEOs and corporate representatives.

"We've really worked hard to come up with an approach that would give attendees a great deal of flexibility in planning their own time at JSC based on their individual interests," said Holkan. "We have an outstanding program that allows our guests to choose from over 100 demonstrations, exhibits and tours across the center. They'll not only have a chance to discover possible benefits and partnerships, but they'll learn quite a bit about our programs, as well."

Representatives will be invited from such industry fields as chemical and petroleum, energy, transportation, agriculture, manufacturing, medical and engineering. Visitors will be provided with an orientation briefing in Bldg. 9, where visitors will be welcomed and registered. From there, they will be provided transportation to 17 different buildings, onsite and off, where they will be met by technical hosts who will acquaint them with the facilities and answer questions.

The program will feature tours and demonstrations in areas such as robotics technology, advanced life support, space suits, structures and thermal technologies, communications technologies, space environment simulation, flight simulation, manufacturing, flight operations command and

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Video conference opens interactive doors

Residents visiting the "Wonders of Technology" pavilion at the 1996 Minnesota State Fair were able to take part in the JSC Open House by way of a live video-conference link between Bldg. 9 and the NASA exhibit in the pavilion.

Visitors to JSC's Open House talked with Minnesota residents via video conferencing about the mock-up facility. In addition, astronauts and engineers gave several demonstrations that were televised to the fair and visitors were able to practice station assembly operations, dock the space shuttle to the Russian Mir Space Station, and perform a fly-around of space station from a Manned Maneuvering Unit engineering mockup.

This was only one of the many interactive items supporting the "Great Minnesota Get Together" held Aug. 22 through Sept. 2. The Space Station Outreach and Education Team exhibit attracted more than 600,000 visitors this year at what is one of the country's largest state fairs.

"This is truly a team effort by Life Sciences, Engineering, the Astronaut Office, the Office of Public Affairs, Boeing Public Affairs and Space Station's Operations and Utilization Office", said James Dean, lead of the Space Station Outreach and Education Team. "This is the third year the Minnesota High Technology Council has invited us to take part in a new concept that has evolved and grown at the Minnesota State Fair."

The High Technology Council has recognized the decrease in participation and interest in the agricultural focus of the fair. The infant "Wonders of Technology" pavilion presents the latest in technology and highlights those businesses in Minnesota leading the field, such as 3M, West Publishing, US West, University of Minnesota and others.

"We want people to come to the

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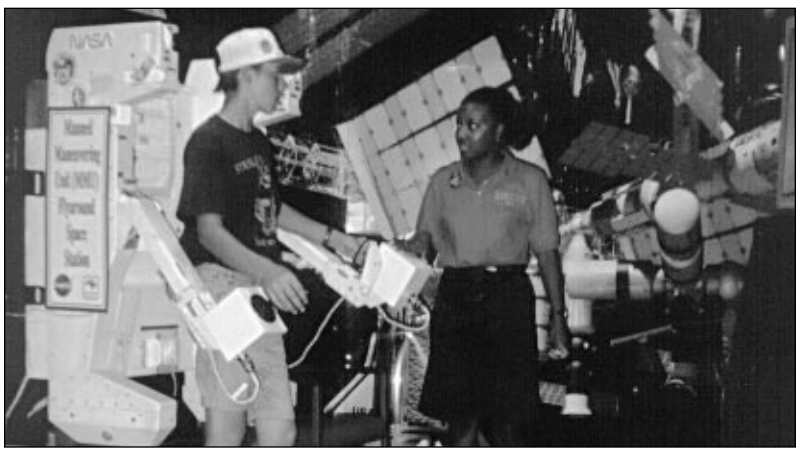

Renee Falls, right, of the Space Station Outreach and Education Team shows a Minnesota visitor how the Manned Maneuvering Unit engineering mockup works. More than 600,000 visitors stopped by the Educational display recently at the Minnesota State Fair.